

Wednesday evening—Special meetings with papers—(3 or 4).

Thursday morning—Clinics and demonstrations in Oakland.

Thursday afternoon—Reading of papers.

Friday—Clinics in San Francisco at various institutions.

Saturday morning—Clinics in San Francisco.

The following is the provisional program for the Eye, Ear, Nose and Throat Section of the State Medical Society meeting in Oakland the 15th, 16th and 17th of April:

The first day of the meeting will be a joint meeting with the Western Section of the Triological Society, and it is the plan of the chairmen of both societies (Dr. Hill Hastings of Los Angeles and Dr. H. B. Graham of San Francisco) to hold, in addition to the three days' meeting, clinics at the various hospitals and an exhibit of pathological specimens, X-ray plates and new instruments in some central location, on the Monday preceding and Friday and Saturday following the meetings.

Any additions to the program may be handed to the Secretary, Dr. G. W. McCoy, Security Building, Los Angeles, or to the Chairman, Dr. H. B. Graham, 209 Post Street, San Francisco.

The Ductless Gland Extracts in Relation to Ear Affections.

Dr. H. Y. McNaught, San Francisco.
Meningitis of Otitic Origin Due to Organisms of the Septothrix Group.

Dr. Henry Horn, San Francisco.
Sclero-Corneal Trephining for Glaucoma (R. H. Elliot). Dr. Kaspar Pischel, San Francisco.

Sub-Conjunctival Injection of Cyanide of Mercury. Dr. A. S. Green, San Francisco.
Iritis; Some Facts of General Interest.

Dr. Vard H. Hulen, San Francisco.
Concerning the Lingual Tonsil.

Dr. M. W. Fredrick, San Francisco.
Thrombosis of the Lateral Sinus with Report of Five Cases.

Dr. Cullen F. Welty, San Francisco.
Tuberculosis of the Middle Ear.

Dr. H. B. Graham, San Francisco.

Mouth and Larynx Signs and Symptoms in Tuberculosis. Dr. H. F. Moore, San Francisco.

Trephining of Eye Ball for Glaucoma—A Clinical and Experimental Study.

Dr. W. S. Franklin, Dr. D. R. Powell.
An Unusual Case of Ophthalmic Migraine.

Dr. E. W. Alexander, San Francisco.
Effects on the Eye of General Pathological Conditions (Case Histories).

Dr. W. F. Blake, San Francisco.
Tuberculous Lymph Glands of the Neck.

Dr. Burt S. Stevens, San Francisco.

Provisional program of the Urological Section and the American Urological Association (Western Branch), which is to be held in conjunction with the California State Medical Society meeting.

The titles of the papers are:

Partial Bilateral Nephrectomy in an Advanced Case of Calculous Pyonephrosis.

Dr. Wm. E. Stevens (by invitation).
Undescended Testes. Dr. R. L. Rigdon.

Treatment of Gonorrhea in the Female.

Dr. Walter S. Johnson.
Pyclography in the Diagnosis of Hydronephrosis.

Dr. Martin Krotoszyner.
Operations on the Closed Bladder.

Dr. Henry Meyer, San Francisco.
Modern Therapy of Syphilis.

Dr. Victor Vecki, San Francisco.

Dr. Krotoszyner wishes to announce that he will demonstrate cases at the German Hospital at time to be arranged in the future.

Papers for Section on Medicine.

Peribronchial Origin of Tuberculosis with Study of Early Cases. Dr. Phillip King Brown.

The Routine Study of Diabetic Patients.
Dr. Thomas Addis.

Sources of Error in Blood Pressure Measurements. Dr. E. S. Kilgore.

Occupational Disease—Aspects of Nitroglycerine Manufacture. Dr. G. E. Ebright.

Rheumatism in Childhood. Dr. J. A. Colliver.
Unusual Forms of Typhoid Infection.

Dr. W. T. Cummins and Dr. P. K. Brown.
Some Aspects of Tuberculosis. Dr. N. Bullock.

ORIGINAL ARTICLES

TONSILS AND ADENOIDS—THEIR SIGNIFICANCE.*

By GEORGE H. KRESS, B. S., M. D., Los Angeles.

Tonsils and adenoids are among the most important structures in the human body. This statement is made not so much from the standpoint of the known physiological function of those tissues, as from the serious results produced by the pathological conditions to which both are so liable.

In the consideration of tonsils and adenoids, it must be remembered that these structures are only a part of a group of analogous tissues located at the upper entrance of the respiratory and alimentary tracts and spoken of as "the lymphoid ring of Wal-

deyer." This ring of Waldeyer may be said to include the two palatine or faucial tonsils in the back part of the mouth or fauces; the adenoid or epipharyngeal tonsil located in the epipharyngeal or post nasal space; the lingual tonsil situated at the base of the tongue; some isolated lymphoid patches in the larynx, especially about the ventricles and sometimes called the laryngeal tonsil; and some scattered patches of lymphoid tissue in the nose, especially about the lower turbinates, referred to occasionally as the nasal tonsils. To this group may also be added what are called the tubal tonsils, which are patches of lymphoid tissue about the mouths of the eustachian tubes; these latter being, however, regarded by some as only a part of the adenoid tonsils. The term tonsil as applied to these structures has no special significance other than to present the thought of a mass of lymphoid tissue very like that of the two almond-appearing palatine

* Read before the joint meeting of the Los Angeles County Medical and Los Angeles County Dental Associations on November 12, 1912.

bodies nearly always thought of when the term tonsil is used. All these structures in fact may be said to have a histological structure very similar to that found in Peyer's patches in the intestine, or in the solitary lymphoid follicles of the appendix or colon, or in the lymphatic glands in other portions of the body.

Embryologically considered, the tonsils make their appearance about the fourth month of gestation and at birth have a size about one-fifth to two-fifths of an inch in diameter. They reach their full size about the sixth or eighth year, then gradually begin to atrophy so that at the age of puberty, say twelve to fourteen, they should normally be very insignificant structures, so far as external appearances go.

Anatomy of the Faucial Tonsils. The palatine or faucial tonsils are two, each tonsil having a free inner surface facing the fauces or oro-pharynx, the remaining portion of the structure lying in a fossa formed laterally by the sheath of the superior constrictor muscle; anteriorly being bounded by the anterior pillar, which fold of mucous membrane covers the palato-glossus muscle (which when it contracts helps constrict the faucial isthmus and holds the tonsil back in place); and posteriorly being bounded by the posterior pillar, another fold of mucus membrane covering the palato-pharyngeus muscle (the contraction of which muscle helps lift the soft palate as well as also aiding to make smaller the isthmus of the fauces).

At birth the tonsils are often covered by a membrane or plica tonsillaris, but by the end of the first year of life only two portions of this usually remain, known respectively as the upper or plica semilunaris, which often forms also the inner covering of a fossa or recess above the tonsil known as the supra-tonsillar fossa; and the lower or base or plica triangularis.

The external portion of the tonsil, lying on the sheath of the superior constrictor muscle, is covered by a firm capsule, the arteries (tonsillar, ascending pharyngeal, ascending palatine and dorsalis-linguea) entering in the neighborhood of the base or hilum. A plexus of veins covers the tonsils and there is a free connection with lymphatic vessels by which the tonsils are connected with the submaxillary glands and then to the deep chain of cervical lymphatic glands. Von Lénard has also shown a close lymphatic connection of the tonsils with the lymphatic tissue of the nose (as witness sympathetic tonsil inflammation after nose operations) and also with the opposite tonsil; and Grober's experiments of injecting coloring matter into the tonsils have shown its transposition to the neck and bronchial glands and to the connective tissue at the apices of the lungs.

The nut-like bodies known as the palatine or faucial tonsils at maturity have a size of about one inch in length, three-fourths of an inch in width and one-half an inch in thickness. At puberty they undergo physiological atrophy, so that it is claimed that after the age of fourteen a tonsil which appears to be other than a shrunken mass may be looked upon as abnormal.

The faucial surface of the tonsil presents the

mouths or openings of from five to fifteen or twenty glands or crypts, which extend back at times to the capsule and which are lined with pavement epithelium and surrounded by lymphoid tissue such as that already referred to.

Anatomy of the Adenoid Tonsil. As regards the normal anatomy of the adenoid tonsil or Luschka's tonsil or the epipharyngeal tonsil (by which latter names it is also known) we have to consider only some discrete patches of lymphoid tissue held together by a network of connective tissue and located on the wall of the epipharyngeal space, especially in the mid line region; and covered by columnar epithelium, some of it ciliated and pierced by a few mucous glands. This tonsil of Luschka, so named because it was Luschka who with Kolliker in the seventies described this tissue histologically, really becomes, when it is in a morbid state, what is popularly known as an "adenoid" or "adenoid vegetation."

Luschka's tonsil is then a normal structure only when its own size is in proper relation to the surrounding spaces and tissues, and becomes an abnormal tissue or so-called adenoid when it assumes a change of structure and size, be that size large or small, sufficient to make it interfere with the normal condition and function of the epi-pharynx.

Adenoids are not usually noticed until the age of three to ten, but that does not mean that they are not present before that time, for we know of one surgeon of our own city who has operated, with much benefit, on at least a dozen patients of one month of age or so in the last few years. Luschka's tonsil while usually noticed between the ages given is less frequently seen after the age of fifteen because of the physiological atrophy which it usually undergoes with the advent of puberty.

Physiology of the Adenoid Tonsil. Of the physiology of Luschka's tonsil little is known and at most we can only affirm perhaps that the ciliated epithelium helps keep the secretions in proper motion; the mucous secretion adding its share of moisture to the respired air and the lymphoid elements performing the usual function of lymphatic gland tissue.

Physiology of the Faucial Tonsils. The physiology of the palatine or faucial tonsils has been more studied but cannot be said to be much more settled. The case of true and demonstrable physiological function of the palatine tonsils cannot yet be affirmed to have been made out. Among the possible functions which have been put forward for the palatine tonsils are the following:

1. That it is a modified lymph gland, and that it wages war against germs by means of its lymphocytes and secretions.

2. The view of Bordley that these tonsils have an internal secretion which helps regulate the ductless glands of the body.

3. That these tonsils in conjunction with other structures in the naso-pharyngeal lymphatic chain may produce substances in early life which have to do with the proper development of the facial bones and cavities.

4. That they may have a part to play in the modulation of the voice.

5. That they help moisten food in preparation for deglutition and perhaps throw out a ferment having an influence on the sugars.

6. That in the early years of life they may play a part in the production of the blood.

7. That it is a residual or vestigial organ with no real function of importance.

Of the above theories, we can agree that food particles are probably moistened and thus the tonsils are perhaps of some aid in the act of swallowing. It is probably not a residual organ because the tonsils are larger in human beings than in almost all other animals. They may be and probably are protective barriers against germ infection when they are in a state of health, but as the tonsils seem more often to be abnormal than normal, even the value of this function of phagocytic protection is minimized. The other theories may be passed over as having in no sense been proven. This certainly leaves no over-great amount of physiological function as a reason why our palatine tonsils should not be removed when they are abnormal or diseased.

Physiology of the Mouth, Nose and Pharynx. Before taking up the symptoms of abnormal adenoid and faucial tonsils it may be well to consider for a moment the physiologic functions which are especially interfered with when these structures take on abnormal characteristics. The three functions especially involved in diseases of the oro-naso-pharynx are those of respiration, swallowing and phonation.

As regards respiration, we must consider first normal or nasal respiration and second, abnormal or mouth respiration. In quiet normal or nasal respiration the mouth is closed off from the pharynx because the tongue and soft palate approach one another, so that the air must pass from nose, into pharynx and then into the larynx.

In abnormal or mouth respiration, in order to permit the air to get into the larynx the tongue and palate must separate, the palate in this act rising higher to lie against the posterior pharyngeal wall.

As regards phonation or voice modulation, we have to consider the nasal consonants or sounds like m and n on one hand and the ordinary consonants and vowels on the other. In the production of nasal sounds the soft palate hangs down in a flaccid state, so that the nasal air column may be set in vibration; but in other sound production, the soft palate is usually drawn up so as to almost cut off the nasal cavity.

As regards swallowing, the food is received by the tongue and pushed back, the hard palate first offering the necessary counter-resistance and the soft palate rising in addition, so as to close off the nasal cavity, while the larynx is pulled up and protected by the epiglottis.

It is then these functions of proper breathing, speaking and swallowing that are so frequently involved, locally, in the abnormalities of the faucial and adenoid tonsils, which can now be considered.

Etiology of Tonsillar Abnormalities. Before taking up the symptoms of diseased conditions of

these structures it may be asked what are the etiologic factors which play a part in the production of such abnormal states of the tonsillar tissues.

In a general way faulty hygiene, and unfavorable climatic environments, with a certain amount of hereditary predisposition may be said to all play causative roles.

Since adenoid and faucial tonsils are structures normal to the body at birth, the question of the influence of heredity arises. It would seem that parents who have had morbid conditions like tuberculosis, syphilis, malaria and similar debilitating diseases are more apt to transmit a decreased resistance to their offspring, resulting in a hypoplasia of tissue structure in such children, associated frequently with an hypertrophy of lymphoid structures in which the tonsillar tissues of Waldeyer's ring are more or less involved.

Outside of this hereditary influence just mentioned anything that produces a so-called cold or coryza in children may bring about a vicious circle that finds expression in disease of the tonsillar structures, with their resultant consequences. Faulty body and home hygiene are then of first importance as causative factors, for all must appreciate how miserably, from the hygienic standpoint, our infants and children are clothed, bathed, fed and exercised and how greatly these factors, with improper methods of ventilation, favor the production of one naso-pharyngeal cold or coryza after another. If with these, is associated a damp, unpleasant climate and improperly heated and ventilated homes and school rooms, the tendency to such inflammations of the naso-pharyngeal mucous membrane is still further increased.

Each attack of such an inflammation in infants and children (who do not know how to clear their nasal passages by blowing, and whose physical lives from day to day are filled with extra burdens thrown on their digestive and eliminative functions), means a greater or less change in the structure of the mucous membrane lining the naso-pharyngeal tract and especially in the lymphoid tonsillar structures which are called on, in these inflammatory states to absorb and get rid of the deleterious secretions associated with such conditions.

No wonder that in the recurrence of one after another of such too frequently produced and nearly always improperly treated colds, the burden on these lymphoid tonsillar structures becomes so great that they find it impossible to return to their normal inoffensive size, structure and function. And once these tonsillar tissues so change in size and structure and function, so as to mechanically and physiologically interfere with the proper work of breathing, swallowing and speaking, a vicious circle is established which still further favors the production of the symptoms now about to be enumerated.

Some of the symptoms of enlarged faucial and epipharyngeal tonsils or adenoids will be considered together, since in many cases adenoids are present when tonsils are hypertrophied or vice versa, and since in some respects they act analogously in the production of symptoms.

The manifestations of mechanical obstruction to respiration may be said to be the more important as regard the adenoids, whereas in the tonsils, the abnormalities resulting from absorption and degeneration seem to play the larger role. The picture presented by children with these tonsillar overgrowths varies greatly in degree and it must be remembered, as already stated, that the large size *per se* of a tonsil or an adenoid is not of so much importance as are their size in proportion to that of the surrounding spaces; nor is the size itself a matter of moment when mischief arising from secondary infection is serious or frequent. A small adenoid in a small and crowded epipharyngeal space may then be much more of a mischief maker and interfere far more with surrounding functions, than a much larger adenoid located in a relatively capacious epipharyngeal space. A similar analogy may be said to exist as regards the tonsils.

In considering the palatine tonsils, the symptoms of acute follicular tonsillitis or supratonsillar abscess will not be taken up, other than to state that repeated attacks of such diseases should in themselves be indications for the enucleation of such tonsils.

Luschka's tonsil when enlarged sufficiently to be worthy of the name "adenoid," may be of a firm or true hyperplastic structure or of a soft or villous form known as an adenoid vegetation, marked by furrows somewhat after the shape of the brain convolutions.

Symptoms—Especially of the Adenoid Tonsil. As a result of either type of enlargement, the epipharyngeal space is partly obliterated by the adenoid, so that less air can pass through this channel. As a consequence nasal respiration becomes more superficial and so also does pulmonary respiration, and with the poorer pulmonary respiration goes a poorer development of the pulmonary tissue itself, especially at the apices.

It must be remembered that the bones of infants and children are comparatively soft and pliable and that they respond most easily as regards their growth and proper development, according as the functions for which they were intended are properly brought into play. Thus the superficial nasal respiration with its secondary superficial pulmonary breathing brings about the production of more or less round shoulders and a stoop in the gait. The condition known as pigeon breast also often results. It will be seen that other changes in bone conformation result in analogous manner in other regions.

The obstruction to proper nasal respiration causes an accumulation of secretion in the nasal passages and when this is irritating, an eczema of the upper lip is produced. The blocking of the epipharyngeal space causes a certain amount of compensatory mouth breathing, proportionate somewhat to the amount of nasal respiration done away with.

This oral breathing brings to us our patients whom we classify as mouth breathers. If the train of symptoms stopped with this lone cosmetic deformity the condition would not be so serious, but that is just the beginning of a real vicious circle of malformations and malfunctions. With this open mouth, to permit of the necessary intake of air

through the passage, go a drooping jaw and receding chin, and flaccid facial muscles, so that the facial folds that have so much to do with expression are obliterated.

Owing to the comparative non-use of the nasal passages, the stimulus to proper development of the facial bones which comes from use of the muscles and tissues in nasal respiration is much diminished, and because of this non-use and associated lack of stimulation, serious changes and deformities in the developing soft bony tissues of the face result. Thus the development of the upper jaw is seriously interfered with, the dental arch fails to assume its normal shape, the teeth have a tendency to overlap, the incisors often pushing forward and the canines somewhat outward. This protruding upper jaw and high, narrow and V-shaped arch of the palate is often quite pronounced in some patients. Often the teeth have a tendency to erupt higher up, and in a crowded and irregular manner.

The retained and decomposing nasal and pharyngeal secretions favor the invasion of these tissues by bacteria and as a consequence these children have more caries of the teeth than is usually the case, Manciola stating that the upper incisors and lower molars are especially apt to be thus affected.

The sinuses of the facial bones do not develop properly because they, too, lack the stimulus that comes from the air currents present in normal nasal route breathing.

It is possible that such a matter as faulty hygiene in feeding infants may also be at fault in the development of the facial bones. Barnard has called attention to the fact that artificially fed children are more predisposed to adenoids than those fed at the breast. A child taking milk at its mother's breast draws long inspirations which help keep the nasal passages free of secretions and which may have in this manner a considerable part to play in the proper circulation of the nasal tissues and in the development of the surrounding bones. Infants fed on the bottle, on the contrary, do not usually breathe as deeply, and as now-a-days so many infants are bottle-fed, this may account in part for the seeming increase of adenoids among our children.

Because of the increased secretions from the adenoid tissue and the retention of nasal secretions, there is a tendency, especially at night, for these secretions to drop downward, and in that way they lead to a descending catarrh of the mucous membranes, with resultant catarrhal pharyngitis, laryngitis and bronchitis, and the air inspired through the mouth, being devoid of the moisture usually given to it by the nasal mucous membranes still further accentuates this catarrh of the bronchial tree.

Many of these children manage to breathe through their nostrils during the day time, but at night, in the recumbent position, when the muscles are relaxed and the circulation more sluggish so that the parts are more engorged with blood, the child joins the ranks of the true mouth-breathers. This mouth breathing is but a poor substitute for nasal respiration, however, both as regards quantity and

quality, and as a consequence these children at times, especially during their sleeping hours, literally have an air hunger; so that such children are restless in their sleep, may have night terrors, night sweats and nocturnal incontinence of urine. The superficial breathing means resultant inferior oxygenation of the blood, and the restlessness prevents the child from getting a refreshing sleep and these two thus bring about an impoverished blood or anemia and a real feeling of being tired and sleepy when morning comes. No wonder such children seem stupid. Under the same conditions, grown-ups would present a similar picture. The anemia may be increased when the lymphoid follicles are at the same time also foci of septic matter.

A very serious result of adenoid growths is the involvement of hearing, some authorities contending that by far the greater proportion of middle ear catarrhs and suppurations in children have their origin in adenoids. Earaches and catarrhs of the eustachian tubes and middle ear, with resulting deafness are therefore especially frequent in these children. The deafness resulting from adenoids may come about in a number of ways. There may be direct obstruction of the mouth of the eustachian tube so that the tube cannot drain properly. Or the adenoids may press on the tubal muscles so that it is difficult to keep the air in the tube and middle ear of the same pressure, as it is on the other side of the drum, in the external auditory canal. Or the inflammation of the mucous membrane of the adenoid may by extension involve the lining membrane of the eustachian tube and middle ear. Again, adhesive bands may be formed. The increased nasal secretion and the increased effort to get rid of it, as well as the increase in the infective power of this secretion, makes more liable, also, infection of the eustachian tubes, by insufflation of such material, during efforts to clear the nose.

Probably twenty-five per cent. or more of all children have some deafness and in the big majority of these cases, this deafness probably had its initial start in adenoids. The prevention and treatment of adenoids, from the standpoint of conservation of hearing and economic utility is therefore of tremendous importance.

The stupid and expressionless faces of these children are nearly always fair reflections of their mental capacity and intelligence. This mental stupidity has been given a special name by Guyé of Amsterdam and is called aprosexia, one of its distinguishing features being an inability on the part of the child to concentrate its attention, due, it is thought, to an interference with the circulation of the brain. Part of the inattention is, however, often due to the associated deafness. These children not hearing well, they cease to pay attention and in that way their listlessness and indifference is emphasized.

Owing to the change of form in the epipharyngeal space and the interference with the proper muscle movements of the palate, these children often talk with a nasal twang, a dead voice as it were, and some even have a tendency to stammer.

The enunciation of some of the consonants is especially difficult.

Interference with the sense of taste; a cough from the inflammation of the bronchial tree; nose bleed from picking at the crusts and irritating nasal secretions; gastric disturbance from swallowing the nasal secretions; fetid breath from the decomposing secretions; and reflex nervous symptoms of neurosis and irritability are other symptoms which have been noticed. One observer has also called attention to the frequency of conjunctivitis in those children. It is to be remembered, however, that all mouth-breathers are not necessarily stupid mentally, nor that all children with adenoids, present the typical features of mouth-breathers.

For, it must be remembered, children are found who show little else than underweight and listlessness and who seem to have no normal capacity for increase of strength and vitality—a condition of hypoplasia as it were—in whom no other cause for the lack of growth and development can be found than possible foci of infection in the tonsillar tissues. The fact that groups and schools of such children have been shown to improve greatly, both physically and mentally, after the enucleation of tonsils and adenoid tissue seems to bear out the contention that those tissues were really playing a decided part in the production of the hypoplastic condition of these children.

The symptoms given up to this point are those which usually go with adenoids, although in milder degree they may also be expressive of hypertrophy of the faucial tonsils.

Symptoms and Results—Especially of the Faucial Tonsils. The special significance of diseases of the tonsils lies in the fact that they can not only set in motion the train of morbid phenomena just given, but that over and above that, they can be the entrance doors by which a large number of serious infections can gain access to the general system. For it must be remembered that the tonsils if not actually lymphatic glands, are closely related structures of the type perhaps of the thymus glands, and that whichever the case may be, there is an intimate connection with the lymphatic vessels and circulation of the body, so that it is comparatively easy for infective material to be carried to other lymphatic spaces such as the joints or muscle sheaths, or to get into the circulation, and at places where the proper conditions obtain, to set up secondary infections. Many of these infections are of a septic nature, as would be expected somewhat from the light which bacteriologic researches have thrown upon the nature of the micro-organisms found so oftentimes present in diseased tonsillar tissues.

Prominent among these secondary infections or complications or sequelae of diseased tonsillar structures is tuberculosis of the cervical lymphatic glands, there being in this particular complication an additional possible role as a route of infection for pulmonary tuberculosis.

The causal relation with rheumatism is too frequent to be ignored and it has been stated that Barker of Johns Hopkins has tonsil enucleations

done on nearly all of his rheumatic patients, before they leave the hospital.

Bronchitis, pleurisy and pneumonia; endocarditis, peri and myocarditis; myositis; neuritis, phlebitis, osteomyelitis and nephritis have all been shown to have arisen in persons in whom diseased tonsils seemed to be the only portals of entry for these infections and diseases.

Scarlett of Philadelphia in a series of appendicitis cases showed that fifty per cent. of the cases had suffered from previous anginas.

In a goodly number of patients with tonsils and adenoids, the temperature, if carefully taken at frequent intervals, will show an increase over the normal. Here, also, the explanation is probably to be found in a focus or foci of infective material.

Other diseases of a septic nature have also been brought forward but enough have been mentioned to show that the menace to health and life from this source is undoubted and serious.

The far-reaching and grave effects of tonsils and adenoids having been shown a few words concerning diagnosis and treatment may not be out of place.

Diagnosis.—The diagnosis is made on the symptoms and signs just given, it being kept in mind that the picture may vary from the hypoplastic, underweight child who seems to be a mouth breather, to the typical mouth breather with adenoid facies. In the diagnosis, the use of the post-pharyngeal mirror permits often a fairly good view of the adenoid tissue. Far less often, these structures can be seen through the nose. The finger, passed into the post-pharyngeal space often gives even more valuable information than either of the above. But the verification of the diagnosis of adenoids by these latter procedures, all of which have a tendency to frighten a child, unless most gently done, would not seem to be absolutely necessary. The operation for removal of the structure is warranted when the symptoms previously outlined are present in whole or in good part, and when no other process can be found to account for the same.

Treatment. What is the treatment for diseased tonsils and adenoids? One word tells the story and that word is "removal."

The adenoids may be removed by one of the more modern adenotomes or by a curette, either the original Gottstein pattern or one of its modifications. If in the course of several years this adenoid tonsil again hypertrophies (that is, continues to grow, in spite of its previous excision, as is apt to be the case in very young children), then remove it again as before.

For the tonsils, a host of methods of removal have been brought forward. In America the tonsillotome or guillotine, by means of which only the top or free portion of the tonsils are removed, is being rapidly discarded, so that to-day, as a rule, only the operation of complete removal or enucleation is that which is attempted. It must be acknowledged, however, that the supposed complete enucleation or tonsillectomy is often only a partial removal or tonsillotomy. But even partial re-

movals have at times been productive of much improvement in the condition of these patients.

We believe with those who are in favor of a complete removal and advocate the use of this operation on a liberal basis, our ground for so doing being the havoc which tonsils and adenoids can produce, as already outlined in this paper.

And yet it is proper to state that the operation for complete removal is by no means accepted the world over. In Germany, only a few months ago, in a discussion which we had with Professor Kilian, that authority pooh-poohed the Sluder operation and we saw only the old-fashioned guillotine or partial removal tonsil operations in his clinics. And in speaking to his first assistant, Albrecht, when we told him of one American operator, Sluder, who probably did about four or five hundred tonsil enucleations per year, we received the reply that that number of tonsil enucleations ought to be sufficient for the whole world. We were personally never able to accept the reasons of the Berlin authorities for their preference for tonsillotomy, which seemed to be based on a fear of greater or more serious hemorrhage from tonsillectomies than from tonsillotomies, and upon certain supposedly deleterious traumatic or other effects in complete tonsil removal.

By contrast to this, however, in the big Chiara Clinic in Vienna, virtually the only operation done was that of enucleation, and here, in order to permit us to try out the Sluder enucleation or evulsion method, they brought us little children, the nurse wrapping only a sheet about them to hold them, and then with mouth gag in place and no anesthetic whatever we were told to go ahead and evulse the tonsil by the Sluder method. We confess this latter somewhat cold-blooded procedure seemed almost as much an extreme in the one direction, as the Berlin teaching seemed to be in the other.

The method which we ourselves like best is the quick or "rausch" anesthesia with hot ether, and enucleation by dissecting away the upper and lateral poles of the tonsil with a curved semi-blunt dissector, and removal of the tonsil mass with the cold snare. This operation in virtually every instance can be made to bring out the tonsils in capsule and can be as rapidly done as any other method we have ever witnessed, the method of Sluder as we have seen it done by himself being no exception. With this method of partial anesthesia, the patient is usually semi-conscious before he reaches his room from the operating table.

To our viewpoint, a most important item in operative treatment, is the education of the child, after the operation, in proper methods of nasal respiration. This is accomplished by certain breathing exercises and attention to nasal hygiene.

This, then, presents our case, as we wish to make it, against diseased tonsils and adenoids.

Our inability to find an important physiological function for the structures should not lead us to advocate their treatment by ineffective local applications, when we have before us the host of deleterious immediate and remote effects they can bring into operation in the human organism.

Statistical evidence everywhere goes to show the wide prevalence of these diseased conditions of tonsils and adenoids in our children and proves equally well the beneficent influence of proper surgical intervention on the organisms and general health of such children. To advocate a wait to see if the tonsils will atrophy spontaneously, is to advocate a procedure not warranted by our present knowledge.

Think for a moment, of the large number of human beings who as children had adenoids and diseased tonsils and which were neglected, so that the physical and mental development were so seriously retarded that these individuals, in consequence thereof, and the deafness so often associated therewith, were relegated to lower places on the social and economic ladders than would have been the case had they received proper operative treatment!

Surely the crosses which this host of fellow beings unnecessarily are made to bear, leaving out of account all other reasons, should be sufficient to make us look upon properly indicated adenectomies and tonsillectomies as of the highest economic and social significance and worthy of the broad exploitation these subjects are now receiving. And in this work of education we feel sure that our colleagues of the dental profession will be more than willing to do their part.

OPERATIVE TREATMENT FOR TIC DOULOUREAUX OF THE INFERIOR DENTAL NERVE.*

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I desire to state that in this paper there is no intention to discuss the relative merits of the different forms of treatment for inveterate neuralgia of the inferior dental nerve, for it is accepted that certain methods of treatment such as injections of alcohol, etc., are sufficiently effective as palliative measures to satisfy the patient, even if their results are not permanent.

The patients here considered are those who have been subjected with more or less indifferent success to all of the accepted methods of treatment, and who in despair apply for relief; it is in this class that surgical intervention should be resorted to.

Resection of the inferior dental nerve is not difficult when carried out according to the methods generally advocated, but the end results are not satisfactory. As far as the simplicity of the operation is concerned this is quite true, but under ordinary circumstances the operation is incomplete, so that after a year has elapsed there is often a recurrence of the pain and as the patient does not return, it is assumed that a cure has been accomplished, when as a matter of fact this is not the case. With the resection of this nerve as it is usually carried out, recurrences are almost as frequent as after alcohol injections.

The points that I desire to emphasize have no claim to originality but consist of a few procedures that make the operation complete so that a permanent cure can be effected.

The operation has for its object the complete removal of the entire inferior dental nerve, including its extreme ramifications which have their endings in the mucosa of the lip. The incisor branch, which is a continuation of the dental nerve beyond the foramen and which goes to the incisor teeth, should also be removed from its canal. When the nerve is removed in its entirety, if it is the only one involved, a permanent cure is effected.

The usual methods advocate the removal of the inferior dental nerve in its canal, laying no particular stress upon the removal of the incisor branch or the filaments that go to the lower lip and its neighboring tissues.

I believe, and my experience has borne this out, that even if the entire inferior dental nerve in its canal is removed, and if the branches as they pass into the tissues are not withdrawn, a permanent cure does not always result, for in one instance the entire inferior dental nerve was removed from its origin to the mental foramen and the pain was not relieved until the filaments going to the tissues of the lip were avulsed.

Operation: The following method has been developed after numerous experiences, and while it may be slightly more difficult than those generally advocated, in my opinion it has been followed by more satisfactory results.

A small incision is made through the mucosa between the two bicuspid teeth at their roots, which readily uncovers the mental foramen together with its nerves and vessels; the stump of the nerve is grasped with a firm hemostat, when the nerve together with all of its ramifications, which are numerous, are avulsed from the tissues of the lip; this avulsion is easily done by pushing the tissues away from the nerves, which are quite large and very strong and can be firmly held by the hemostat.

These nerve endings are remarkably large and their size will surprise one who has never removed them in this way. They extend deep into the tissues of the lower lip as far as the vermilion mucosa. The nerve can generally be extracted intact with all of its endings. After it has been entirely freed from the lip and all of its branches withdrawn from the tissues, then the inferior dental nerve can be removed from the canal; this is done in the following manner:

There is a spine forming part of the mental foramen at its distal side called the "lingula" which has to be chiseled off, otherwise it is impossible to introduce a probe or any instrument into the canal;

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